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Dear Kristine:

The Oregon Department of Environmental Quality (DEQ) appreciates the opportunity to provide comments on the United States Environmental Protection Agency (EPA) draft Feasibility Study (FS) for the Portland Harbor Superfund Site (the Harbor). DEQ has been coordinating with other State of Oregon (State) agencies and the Oregon Governor's office to provide input to the EPA. We offer general comments on behalf of the State and have attached a compilation of detailed comments from individual State agencies. We will provide additional comments when EPA identifies the preferred remedial alternative in the coming months.

DEQ recognizes that the remedial alternatives presented in the FS involve trade-offs between a number of factors including short and long-term impacts on the Harbor as well as the pace and cost of implementation. As the remedy selection process moves forward, we encourage EPA to build adaptability into the remedy so that it allows for refinement as additional data becomes available, particularly during remedial design. Ultimately, EPA should select a remedial alternative for the Harbor that is protective of human health and the environment and balances cost against the following factors that are of particular importance to the State:

- Assuring that the remedy is implementable from an administrative and technical perspective.
- Achieving the Remedial Action Objectives more quickly.
- Reducing risk remaining at construction completion.
- Limiting habitat impacts and need for mitigation.
- Limiting reliance on engineering controls over large areas.
- Limiting reliance on institutional controls, such as fish advisories, which have low reliability.
- Limiting restrictions on current and future uses of the Harbor and impacts on business opportunities.
- Limiting reliance on monitored natural recovery, except in specific locations where there is a strong scientific consensus that it will be effective.
- Minimizing implementation risk.

A theoretical remedy that will never be implemented, or that will be implemented only after decades of litigation, is not in the public interest. The State recognizes that EPA must select a remedy for the Harbor that is consistent with the National Contingency Plan (NCP) and 40 CFR 300.430(f) specifically; the objectives listed above reflect the State's primary objectives, which will drive the State's decision on acceptance of any proposed remedy.

Key Issues Summary

DEQ, in coordination with other state agencies, has identified the following general concerns and associated recommendations regarding EPA's FS for the Harbor:

- *High cost of the remedial alternatives*. The State is concerned that the high cost of implementing the alternatives in the FS could place an unacceptable burden on the local economy, and potentially greatly increase the likelihood of delay. We look forward to working with EPA in the coming months to identify opportunities to reduce costs without undermining the feasibility of the preferred alternative.
- *Principle Threat Waste (PTW) treatment.* The NCP establishes a *preference*, not an absolute requirement, for treatment of PTW. Consistent with that, we recommend that EPA select ex situ treatment only if it is otherwise required by RCRA/TSCA, and in situ treatment only if it substantially improves the effectiveness and reliability of the remedy.
- *Sediment Management Area (SMA) delineation*. EPA should clarify what role subsurface contamination will play in the lateral delineation of SMAs during remedial design.
- *Constructability and flexibility during remedial design*. EPA should explicitly incorporate flexibility in final design parameters based on unique characteristics of each SMA. This may include extent of removal and thickness and composition of sediment caps.
- *Dioxin/furan Remedial Action Levels (RALs)*. We recommend that EPA develop RALs for dioxins/furans as toxic equivalency values (TEQs) instead of the three congeners currently specified in the draft FS (a dioxin TEQ is used on the Lower Duwamish Waterway and the Army Corp of Engineers Sediment Evaluation Framework for maintenance dredging). We see no reason why the delineation of SMAs should be limited to three congeners.
- *Adequacy of engineering controls during dredging*. We recommend that EPA identify sites with significant levels of bioaccumulatives and further describe the engineering controls necessary during dredging to limit releases and impacts to the food web.
- *Impacts of capping large areas of sediment*. We agree with limited use of engineered caps, and recognize that there may be some areas where more extensive use of caps is appropriate. However, the location of caps needs to be carefully selected to avoid restrictions to navigation and current and future potential commercial maritime development. Particular concerns include:
  - Limitations on maintenance of existing structures resulting from caps,
  - Limitations caps might place on use of public trust resources (anchoring, motor traffic, fishing),
  - Impacts to fish habitat related to the type of cap material,
  - Compensation for loss of public trust uses and resulting costs, and
  - Needs for institutional controls, insurance, and financial assurance.

  We recommend that EPA evaluate the efficacy of using the existing permitting framework, such as the CWA 404, to augment or possibly limit the need for development restrictions in the form of Regulated Navigation Areas (RNAs).
- *Reliance on institutional controls (ICs)*. EPA's remedy should not rely on fish advisories in and of themselves as a primary means of limiting fish consumption. The existing advisories have not

deterred all people from catching and eating fish from the Harbor, and do not address the community and cultural values of being able to consume resident fish.

- *Confined disposal facility* (CDF). A CDF at Terminal 4 can be designed and managed to be protective of people and the environment, and should be considered as an element of the remedy that is selected.
- *Contingent remedies.* The State encourages EPA to consider the use of contingent remedies, perhaps employed under an adaptive management concept, in order to reduce the cost of potentially unnecessary actions. For example, the decision to implement enhanced monitored natural recovery (EMNR) in Swan Island Lagoon could be based on performance monitoring following active remediation within the SMA instead of the presumptive approach currently incorporated into all of the FS alternatives.
- *Water-related Applicable, Relevant, and Appropriate Requirements (ARARs).* The State is concerned about the level of uncertainty regarding ARARs from source control performance standards based on water quality and drinking water. DEQ and EPA need to reach a common understanding of recontamination and application of these standards to the CERCLA area as well as an approach for long-term source control performance monitoring. This common understanding should occur prior to EPA issuing the ROD.
- *Remedial Action Objective (RAO) 9.* The State is concerned about uncertainties regarding integration of riverbank Remedial Action Objective 9 with DEQ source control efforts and responsibilities. We recommend additional discussion regarding this relatively new RAO.
- *Long-term Operation & Maintenance*. We would like more details on EPA's expectations for long-term operation, maintenance and performance monitoring.
- *Data management plan and database*. The State considers utilization of a high quality Portland Harbor data management plan and database essential to the long-term monitoring of remedy effectiveness.

DEQ appreciates the efforts EPA has made in communicating with and receiving input from the State on technical and policy issues relevant to selection of the Harbor remedy.

Sincerely,

Tom Roick
Senior Policy Analyst
Oregon Department of Environmental Quality

State Agency Comments

The following compilation includes comments on the FS from these agencies:

- Oregon Department of Environmental Quality (DEQ)
- Oregon Department of Fish and Wildlife (ODFW)
- Oregon Health Authority (OHA)
- Oregon Marine Board (OMB)
- Oregon Department of State Lands (DSL)
- Oregon Department of Transportation (ODOT)

DEQ has general and detailed comments on the FS that are organized to correlate to each section of the FS; comments from the other state agencies are at a higher level and intended to draw EPA's attention to the particular interests and concerns that each agency has regarding the remedial action alternatives in the FS and EPA's remedy selection generally.

Oregon Department of Environmental Quality

General Comment. DEQ requests that EPA consider **t**he following opportunities for further refinement of the remedial alternatives that may substantially reduce costs while not decreasing overall protectiveness:

- A thinner physical isolation layer for sediment caps.
- Elimination of cap amendments (except in NAPL areas) unless they are determined to be necessary during remedial design.
- Reduced reliance on dredging in Intermediate Areas unless there is a clear impact on beneficial uses of the Harbor.
- Elimination of dredging in areas that would subsequently require capping.
- Reducing the maximum dredged depth currently set at 15 feet.
- Incorporation of less aggressive PAH RALs in navigational areas where direct exposure to this non-bioaccumulative contaminant is less likely.
- Refining GIS mapping where there appear to be anomalies overestimating the size of the sediment management areas for all remedial alternatives.

The following detailed DEQ comments are provided in addition to our comments previously submitted to EPA on Sections 1 and 2.

Section 1, Page 1-19. The GS Roofing site should be included in the descriptions of sites potentially requiring riverbank remediation to be coordinated with in-water remediation.

Section 2

2.2 Remedial Action Objectives, Ecological, RAO 9 – River Banks. EPA included RAO 9 to address potential migration of Contaminants of Concern (COCs) in riverbanks to sediment and surface water, and DEQ understands that EPA is developing a flow chart that outlines how EPA intends to utilize the RAO 9 preliminary remediation goals (PRGs) in the remedy selection process. We look forward to receiving this flow chart and discussing the riverbank remedy

selection, remedial design and remedial construction process. We note that DEQ has and is continuing to characterize potentially erodible riverbank soil and screen results against Joint Source Control Strategy Screening Level Values (SLVs) and the current EPA PRGs to evaluate the need for riverbank source control measures. In most cases, DEQ is not characterizing or evaluating risk associated with riverbank sediment present below mean high water.

- During discussion of the riverbanks, EPA should clarify whether the term riverbank is limited to a geomorphic feature or also applies to beach above specified elevations?
- Is the portion of the riverbank below MHW (defined as sediment in the Final BERA, Attachment 2, Problem Formulation Figure 1) also subject to other RAOs such as RAO 5?
- Will the riverbank remedy selection, remedial design and remedial construction process sufficiently address the riparian zone as defined in the footnote on Figure 1 of the Final BERA Problem Formulation (bank area between MHWM and the OHWM)?

Ecological PRGs, Water. The risk assessment cites PAH specific final chronic values for individual PAHs (Table 3-4 of EPA 2003, *Procedures for the Derivation of EqP Sediment Benchmarks for the Protection of Benthic Organisms, PAH mixtures*) in Attachment 5 (Section 6) which uses individual guidelines for PAHs to determine a final chronic value for calculation of a total PAH toxic unit of the mixture of PAHs. Therefore, the water PRG for Total PAHs should read "Total PAH Final Chronic Value <1."

Ecological PRGs, TPH (C10-C12). DEQ recommends that the PRGs be updated to reflect DEQ's revised TPH PRGs.

Ecological PRGs, Manganese. DEQ recommends that DEQ's analysis of uncertainty related to the re-calculation of this PRG be incorporated into a revised PRG for manganese.

Ecological PRGs, Benthic Toxicity. It is not clear how EPA arrived at the current list of PRGs in RAO 5. Table 2.2-1 appears to be a reduced list of potentially significant risk drivers for benthic toxicity. The BERA does not include a list of ecologically significant chemicals related to benthic risk, and instead lists toxicity test results as the measure of significance ("risks to benthic invertebrates clustered in 17 benthic AOCs"). Dropping numeric PRGs that would provide strong lines of evidence related to benthic toxicity is problematic in ensuring protectiveness for benthic toxicity, particularly in the absence of bioassay toxicity criteria PRGs. DEQ requests that bioassay tests, along with a definition of acceptable risk, be included in the PRG table and that relevant sediment quality guidelines be used as a secondary line of evidence.

Tables 2.2-1, 2.2-2, and 2.2-11 (PRGs). The only PRG for TPH is for aliphatic $EC_{>10}$-EC_{12} (RAO 8). In emails on May 21 and May 26, 2015, DEQ provided EPA with supporting information to develop PRGs for additional aliphatic and aromatic TPH fractions. We included analysis of groundwater data from the Gasco and Arco sites in Portland Harbor showing high hazard quotients and ecologically significant risks from exposure to TPH fractions. DEQ requests that EPA either include PRGs for the TPH fractions, or explain why the PRGs are not necessary.

Table 2.4-3 CAD/CDF Disposal Option Summary.

- The description of the Arkema CDF conceptual design is not accurate as it notes that the CDF would be constructed of a sheet pile wall. The February 2010 Draft Preliminary CDF Screening Evaluation identifies the nearshore CDF as a circular cell coffer dam.

- It is our understanding that the Arkema circular cell coffer dam design was specifically selected to address technical implementability issues associated with placing sheet pile into shallow bedrock. The technical implementability portion of the table should be updated to reflect this.
- DEQ disagrees with not retaining the nearshore CDF at Arkema for evaluation in the FS. While contaminant modeling was not performed, the contaminant mass and concentrations in the remaining stranded wedge post dredging will present significant challenges for flux management in the design of a post dredge cap. The CDF concept is anticipated to be more robust and likely more protective than a post dredge cap. Short-term implementation risk is anticipated to be less with a CDF than the PTW dredge alternatives, and the circular coffer dam design was specifically identified to address implementation challenges.

Section 3

3.2.1 Identification of PTW Areas. DEQ suggests that additional areas be identified as having PTW based on the presence of NAPL (i.e., Kinder Morgan Linnton and Willamette Cove), source material such as spent sandblast grit (i.e, Marcom) and cancer risk (i.e., Willamette Cove). Site-specific comments are listed below.

- Except as noted below, the distribution of NAPL at Gasco (Figure 3.2.1) is consistent with the distribution of "substantial product" as identified in the Gasco EE/CA work. The EE/CA definition of substantial product is not as conservative as the referenced globules or blebs mentioned here and applied to the identification of NAPL at Arkema. EPA should either apply the EE/CA definition of substantial product to the Arkema site or expand the footprint of the NAPL in sediment at the Gasco to reflect a boundary based on globules or blebs.
- The criterion used to identify NAPL PTW includes "…identification in subsurface sediments offshore of the Arkema and Gasco sites (RM 6 through RM 7.5) as globules or blebs of product in surface and subsurface sediments." The area of NAPL PTW shown in Figure 3.2-02 (Gasco NAPL-Based PTW) is reduced in size compared to the area of "substantial product" shown in the Draft EECA (see Figure 2.5.3-1). It appears that certain sediment sampling locations (e.g., C11-A, C264, DGS-07SC) identified as having "substantial product" in subsurface sediments have been excluded from the NAPL PTW figures. The result is the northern-most extent of substantial product is not included within the NAPL PTW boundary.
- Has EPA confirmed that the NAPL observed in sediments offshore of Arkema contains chlorobenzene with dissolved DDT? Upland there are two sources of chlorobenzene NAPL: the chlorobenzene present in the DDT manufacture batch residuals (assumed to contain DDT but never tested) and chlorobenzene released from the still operation to recover chlorobenzene from batch residuals.
- DEQ recommends figures 3.2-02 and 3.2-03 be reviewed for accuracy and completeness. Comparison of Figure 3.2-02 and Figure 3.2-03 shows the footprint of NAPL PTW is larger than the area shown for highly toxic PTW (cPAHs). It is generally more typical that areas of high concentrations (or risk) encompass NAPL.
- Former Mar Com North and South Parcels have spent grit on the beach and likely offshore sediment due to ship refurbishing and breaking activities that took place in uplands and via the floating dock. There is a large amount of debris offshore, to the extent that in-water sediment sampling could not be completed due to refusal.

- Kinder Morgan Linnton (RM4.2 or so) has a small area of LNAPL in the beach sediments outside the barrier wall. The area was characterized in the 10/13/11 *Focused Banks Soils Investigation Tech Memo*. Follow up work was done to evaluate risk in porewater.
- PTW as outlined on Figure 3.2-03 does not appear to include the inner cove portion of the Willamette Cove site where a sheen/free product were observed during periods of low river water near the beach/water interface, and elevated PCBs (to 208 mg/kg), hydrocarbons, and debris were detected in subsurface beach sand (all below OHW). PTW may be present and additional characterization is necessary. It is difficult to discern in the figure whether identified PTW includes the beach portion of the so-called Wharf Road Area, where sheen/NAPL were observed at low water, and high levels of dioxins, mercury, and BaP were detected (see sample LW3-GWC1). This area should be identified as a PTW area. Also, slag/metal debris that could be considered PTW are present in a portion of the northern beach area at the Willamette Cove site that has not been sufficiently characterized.

3.2.2.2 Ex-Situ Treatment. Despite the NCP's preference for treatment of PTW, ex-situ treatment for material that will be landfilled should only be required if there is a defined environmental benefit, required by RCRA or the receiving permitted facility.

3.3.1.1 Focused Contaminants of Concern. This section should clarify that the focused COCs selected for the FS encompass the majority of the magnitude and spatial extent of contaminants posing bioaccumulation risks as identified in the baseline risk assessments. The section should also speak to how the FS will address the areas of benthic toxicity which may be present outside of the areas defined by the focused COCs.

3.3.1.2. Remedial Action Levels (RALs).

- The development of RAL curves should be better explained in this section or by reference to another document or appendix. We suggest adding a brief summary of the process, such as that provided below. The summary should be checked for accuracy to make sure it matches the actual method used to develop the RAL curves. For consideration, we suggest adding the following near the beginning of Section 3.3.1.2:

  To develop RAL curves, sediment concentrations over an appropriate exposure unit were rank ordered. Using a natural-neighbors method, polygons were assigned to each concentration, allowing the calculation of a spatially-weighted average concentration (SWAC) for the exposure unit. This initial SWAC is associated with no remediation, establishing the first point on a plot of SWAC to sediment area remediated. Next, the highest chemical concentration was removed from the dataset, replaced with a background concentration, and a new SWAC was calculated. The new SWAC is associated with an area of active remediation, equivalent to the polygon area assigned to the highest sediment concentration, creating the next point on the curve. This process of sequential truncation, removing the highest remaining sediment concentration and replacing the value with a background value, is continued until all sediment concentrations have been removed and the entire area of the exposure unit is identified for active remediation. The plot of SWAC to area remediated is the RAL curve.

  Figure 3.3-1 is the RAL curve for site-wide PCBs. For each point on the curve representing a SWAC/remediation area combination, there is an associated RAL. The RALs associated with six selected points on the curve are shown on the figure.

The RAL curve simulates the approach of sequentially removing the highest chemical concentrations, and seeing the resulting impact on average concentrations in the exposure unit. The approach uses SWACs, which are average concentrations not equivalent to 95UCL concentrations used to evaluate risk. The approach of sequential truncation is one of many approaches to remediation, and is used here to provide a basic planning estimate of areas requiring remediation, and aid in the selection of RALs. There may be more optimal solutions to remediation that will (over time) meet risk-based concentrations.

- The "Maximum Incremental Reduction of the SWAC" is defined as the point on the RAL curve (i.e., "B RAL") where "further reductions in SWAC concentrations result in minimal increase in acres capped/dredged." The definition does not seem to apply to all of the Focused COC groups. For example, according to Table 3.3-2 remediating 38-acres of the Site reduces the Total PAH SWAC from 36,000 ug/kg to 8,360 ug/kg (a factor of 4.2). Reducing the Total PAH SWAC by an additional 2.2-times (i.e., from the B RAL value [8,360 ug/kg] to the E RAL value [3,800 ug/kg]) requires the removal of an additional 61-acres. Based on this information it may be appropriate to revise the text to clarify the target COCs to which the definition applies. For example, a revised version of the definition might read, "…except for Total PAHs further reductions in SWAC concentrations result in minimal increases in the acres capped/dredged."

3.3.1.2 Dioxin/Furan RALS.

- DEQ recommends that EPA base the D/F RAL on total TEQ to be consistent with the risk assessment remedial objective. While DEQ understands that three congeners are used with the ultimate remedial goal of meeting total TEQ acceptable risk levels, the absence of a total TEQ PRG may be misinterpreted relative to this goal. DEQ believes total TEQ may be a more robust parameter as compared to a subset of congeners for RAL development, and a better method to reliably delineate congener risk in sediment management areas. This parameter is also more robust for new data collected to support the FS, where it may be unclear that the three congeners adequately represent Total TEQ.
- Areas to be remediated based on dioxin/furan data are often defined by just one sample in the various competing alternatives. EPA should consider not including the D/F RALs as a basis for defining the alternatives.

3.3.2.1. Separate NPL Sites with Final Remedies.

- This paragraph should clarify whether EPA is excluding just the McCormick and Baxter site or both the Gould and McCormick and Baxter sites.

3.3.2.2.3 Anthropogenic Influences.

- Figures 3.3-25 and -38. A significant amount of debris is present in the inner cove portion of the Willamette Cove site, both in-water and in adjacent beach areas (particularly evident during seasonal low water). Debris was noted using side-scan sonar but the results in Figure 3.3.25 were not comprehensive. The debris includes both metal and concrete, and is attributed to extensive nearshore/over-water activity in the inner cove in the early- to mid-1900s, and the presence of a large ship hull, located a short distance offshore between the inner cove and wharf road.
- Figure 3.3-08. See comment above for inner cove and wharf road portions of the Willamette Cove site.

- Figures 3.3-09 to 3.3-11. These do not appear to include the (shoreline) wharf road area portion of the Willamette Cove site. Also, 2014 sampling identified very high concentrations of dioxins in the upland portion of the site Central Parcel. Dioxins are likely present in riverbank portion of this area that would warrant remedial action. It is unclear in Figure 3.3-10 whether coloring includes the riverbank.
- Figure 3.3-13 appropriately identifies the Willamette Cove riverbank as contaminated. A portion of the Willamette Cove inner cove closest to shoreline *appears* to be excluded from the SMA area. Additional characterization will likely confirm contamination is present that requires remediation.
- Figure 3.3 – 23. The dock at Shipyard OU-5 CEMEX Plant is not shown.
- Figure 3.3-24. The dock at Shipyard OU-5 CEMEX Plant is a potential prop wash area.

3.3.2.2. Multi-Criteria Decision Matrix. The Multi-Criteria Decision Matrix approach may be transparent and reproducible, but it is also highly influenced by the weighting and scaling of the various elements considered in Figure 3.3-14b. Although the approach may not be "biased," EPA should acknowledge the dependence of the evaluation on assumptions such as choice of cutoff criteria and the scale, and unstated assumptions such as using equal weighting of factors.

3.3.2.2.2. Sediment Bed Characteristics. Shallow bedrock is present adjacent to portions of the Arkema site. Sediment thickness above bedrock is only a couple of feet near the channel side of the downstream docks.

3.3.3.1 and 3.3.3.2. Engineered Caps and Armored Caps.

- It's unclear why a physical isolation layer greater than 2 feet is needed. Note that a 2 foot sand isolation layer has proven effective in the Lower Willamette (e.g., M&B and Zidell).
- Steep slopes and wave zones will require larger armoring.
- Re-deposition would only occur in stable depositional areas.

3.3.3.3. Reactive Caps. As an alternative to activated carbon, pre-formulated products such as Aquagate could be used.

3.3.3.5. Additional Cap Considerations.

- This section should describe the purpose and function of organoclay vs activated carbon. For example, which technology is a better sorptive media for NAPL?
- This section should clarify what AquaBlok product is being referenced. The term can refer to impermeable clay as well as pre-formulated organic carbon.
- Is it correct to assume that this bioturbation layer is the upper part of the chemical isolation layer and not an additional layer to be placed on top of the chemical isolation layer?
- Flood rise modeling for the M&B sediment cap found that flood rise is not very sensitive to fill in embayments and other off-channel areas. Although adding fill to these areas diminishes storage capacity of the river, there is very little impact to flood rise.
- There tends to be heavy debris along riverbanks, which will hamper the efficacy of pre-dredging in these areas.
- As Portland Harbor is a working harbor, remedies need to maintain, be compatible with, or otherwise provide for maritime uses.

3.3.3.6. Institutional Controls. This section should provide more detail on monitoring requirements.

3.3.3.6 Waterway Use Restrictions or Regulated Navigation Areas (RNAs). DEQ recommends that EPA consider the comments of the Oregon Marine Board regarding its authority to prescribe waterway use restrictions. The FS should note that the cost of any signs or buoys required for the remedial action must be considered as they will not be provided by the OMB.

3.3.4. Removal Technologies.

- The FS should be more specific about agencies would be consulted during RD?
- Experience with M&B showed that silt curtains are difficult to maintain as water elevations fluctuate during summer and early fall when tides have the greatest influence in the Lower Willamette. The curtains need to be designed and deployed in a manner that allows equilibration of the water contained within the curtain as river levels rise and fall throughout the daily cycle.
- DEQ requests that EPA reconsider whether ex situ treatment of PTW beyond what would otherwise be required by RCRA is needed as long as dredged material is placed in a permitted landfill (Class C or Class D, as appropriate, e.g., modern liner system, leachate collection, groundwater monitoring, financial assurance, etc.) and the generator obtains pre-acceptance of the material after full disclosure to the landfill.
- The Appendix D analysis and summary in Table 3.3.7 indicates that DDX can be reliably contained. DDX should be removed from the requirement for additional analysis.
- DEQ notes that the EPA determined during the Gasco EE/CA that deployment of sheet pile engineering controls were not feasible due to depth.
- Shallow bedrock at portions of the Arkema site is expected to limit the use of sheet pile engineering controls.
- DEQ requests that EPA not limit the use of rigid engineering controls to NAPL impacted sediment. There should also be a preference for rigid controls when there is substantial risk of resuspending sediment containing high concentrations of bioaccumulative contaminants. These sites and controls should be identified as part of the FS, proposed plan and ROD.

3.3.5.1. Types of Material or Waste and Regulatory Considerations. This section should describe applicability of the AOC provision of CERCLA.

3.3.5.1 RCRA and State-Listed Hazardous Wastes.

- Please clarify the intent of this sub-section. The first sentence of the second paragraph indicates that if sediments bound for off-site disposal are found to contain RCRA-listed hazardous wastes, they should be managed as hazardous waste, including storage, handling and disposal in a RCRA Subtitle C landfill. The second sentence acknowledges the material can be disposed of in a RCRA Subtitle D landfill if it meets the requirements of a contained-in determination obtained from DEQ. Finally, the last sentence in the sub-section indicates that, "Where RCRA F002-listed waste (spent halogenated solvents) from the Siltronic site is found to be co-mingled with the Gasco MGP waste, the material will be classified as a RCRA listed hazardous waste for management and disposal purposes." This sentence appears to remove the option for conducting a contained-in determination on the sediment with detections of F002-listed waste.

- DEQ determined that the groundwater plume which has been mapped at Siltronic from the upland to a discharge point in the Willamette River is an F002 waste. This determination did not include the sediment near the outfall and DEQ is not aware that the specifics of the release resulting in sediment impacts adjacent to the outfall have been determined.

3.3.5.3. Upland Commercial Landfills.

- Likely dredged material disposal options (regional Class D landfills in Oregon, e.g., Hillsboro and Wasco Co) should be discussed and associated transportation routes indicated. The potential for barging material closer to disposal sites rather than using trucks for the entire distance should be discussed.
- Agreements reached with EPA, NW Natural, and Siltronic during negotiations on the EECA AOC/SOW call for an Oregon-permitted landfill designated to receive contaminated dredged/excavation material to prepare a "Special Waste Management Plan" for the project. Another consideration is whether Oregon will allow contaminated materials generated during the Portland Harbor project to be co-disposed with municipal solid waste. In the case of MGP waste this presents a waste characterization/determination issue which should be discussed further.
- DEQ recommends that consideration be given to placing dredged material in stable upland areas where adjacent facility property is available, particularly where contaminant levels are below levels protective of upland exposure pathways or where future upland remedies are planned. For example, at Arkema adjacent sediment could be placed upland as a component of the upland remedy. This would reduce transportation requirements and neighborhood disturbance.

3.3.5.4. Terminal 4 CDF. DEQ recommends that material which would have to be managed as hazardous waste if managed upland simply due to removing the material from the area of contamination but would otherwise meet the CDF acceptance criteria, be allowed to be managed in a CDF.

3.6. Development of Alternatives.

- The section should clarify the basis for 15 feet maximum depth of dredging especially where PTW extends substantially deeper than the 15 foot dredge depth.
- The laying back of shoreline slopes does not apply to Evraz Oregon Steel since they are creating a stabilized slope now. EOS is removing sediment from the beach adjacent to their shoreline to the MHW (9.6 ft) and placing clean 12 inch minus material in the excavation. The beach excavation will extend to a minimum of 2 feet where PCB concentrations exceed 50 ppb, to a minimum of 3 feet where concentrations exceed 100 ppb, and to a maximum of 5 feet where concentrations at 3 feet exceed 676 ppb. Clean backfill will be placed in the excavation. Confirmation samples will be collected from the 3-foot excavation areas and marker stakes/rebar will be placed where concentrations at 3 feet exceed 100 ppb. This is the zone where the shoreline work runs into the in-water work and we expect that these objectives and the marker stakes as necessary will facilitate melding the in-water action with the shoreline work.

3.6.1 and Figures 3.6-1a, b. This section indicates that the presence of NAPL PTW in Shallow Areas and Intermediate Areas will prompt removal of contaminated sediment to "…the lesser of the RAL concentrations or 15 ft." Regardless of the depth of removal, in areas of NAPL PTW there is the potential for dredging/excavation to mobilize NAPL. Accumulation of NAPL could occur within placed materials. Furthermore, accumulated NAPL could migrate beneath low-permeability or reactive residual layers. DEQ recommends that contingencies for this scenario be factored into design. Design factors might

include placement of thicker chemical isolation or reactive residual layer(s) at the base of dredge prism, and/or over excavation and shaping the dredge prism to allow for NAPL accumulation and to prevent migration.

3.6.3. The section should clarify if the intent of the organoclay mats is to provide for sorption or impermeability.

Section 4

4.1.8 Short-Term Effectiveness.

- The release of bioaccumulatives (e.g., dioxins/furans, DDX and PCBs), their uptake into the food web, predicted duration of related elevated concentrations in fish tissue and associated risk needs to identified and included in alternative evaluation process. While the concept is briefly touched on, the FS indicates that elevated fish tissue "would occur primarily during the in-water work window of July 1 through October 31." Actually, elevated contaminant concentrations in fish tissue are expected to be elevated for years after remedial work.
- As noted earlier in our comments on Section 3.3.4, the FS, Proposed Plan and ROD should identify the areas of significant concentrations of bioaccumulatives and specify the engineering controls necessary to safely dredge these sediments.

4.2.2.2 Compliance with ARARs. This section should further distinguish between Clean Water Act programs delegated to the State, upland source control measures, and CERCLA remedial action, all of which will contribute to improvements in water quality. CERCLA-related discharges (e.g., dredging, dewatering, treatment) must be in compliance with water quality standards as ARARs, as applied following national water quality standards guidance. Nevertheless, Portland Harbor remedial action alone may not achieve water quality standards in the river. Prior and on-going source control measures and the PH remedial action should be expected to contribute to attainment of water quality standards and delisting of the reach from the 303(d) list for several parameters over the long term. However, ongoing CWA program monitoring in combination with the remedy will be needed to demonstrate attainment, per national guidance, of water quality standards.

Oregon Department of Fish & Wildlife

ODFW's mission is to protect and enhance Oregon's fish and wildlife and their habitats for use and enjoyment by present and future generations. ODFW vision is to balance utilization of the state's natural resource while promoting healthy fish and wildlife populations by conserving, maintaining and restoring functioning habitats, preventing declines of at-risk species, and reversing declines in these resources where possible. Therefore, ODFW's comments on the FS are focused on maintaining and/or restoring fish and wildlife populations that depend on the Harbor as habitat.

Main Issues and Concerns

A. *Shallow water habitats*. ODFW is concerned about protecting and enhancing shallow water habitats and does not want to see further reduction in the quality or quantity of this important habitat. While

ODFW is in favor of dredging and removing contamination hot spots, EPA should balance the competing objectives of removing contamination and maintaining functional shallow water habitat.

B. *Riverbank Slopes.* Where the remedial action includes disturbance of riverbanks, ODFW recommends that the remedial design of the riverbank include a gradual slope that better connects the riverine habitat with the upland.

C. *In-water work periods*. ODFW regulations provide for a second in-water work period (Dec 1 to Jan 31) that could be utilized to reduce the length of the cleanup as well as overall costs.

D. *Capping*. Where the remedial action includes capping, ODFW recommends that remedial design require caps (in-water and banks) be top-dressed with appropriate soils/sediment (in some deposition areas this may not be needed).

E. *River Recreational Access.* Portland Harbor provides a wide variety of fishing and other recreational opportunities for the largest population center in the state. We therefore encourage as little curtailment to these activities as is possible. Additionally, certain subgroups of the population rely heavily on the river for much needed protein in their diets. Cleanup alternatives and solutions need to consider the impact to these populations.

Detailed Comments on Key Issues:

A. Shallow Water Habitats

- Shallow water is one of the most important habitat types in the Portland Harbor reach. Within the Harbor, shallow water areas represent a dwindling portion of the habitat, as these areas have been filled in and developed over time. The limited remaining shallow water habitat is essential to certain species using the Harbor. Therefore, ODFW recommends that any remedy should avoid reducing or degrading shallow water habitat. The final remedy should have a goal of no net loss in aerial extent and quality of each of the different types of shallow water habitat, and should recommend remedies that encourage retention and expansion of these types of habitat when possible. There are three basic types of shallow water habitat:
    - Of particular importance are intertidal shallow water habitats in the littoral zone, which are not only key foraging areas for juvenile salmonids, and rearing areas for juvenile lamprey amocoetes, but also provide foraging areas for wading and shore birds in between tidal exchanges;
    - Beach areas are important foraging areas for juvenile chinook salmon and represent a transitional habitat between the aquatic and terrestrial zones which allows access to the riverine environment by terrestrial species;
    - Finally, off-channel backwater habitat or tributary connections, natural or man-made, needs to be retained and restored where the potential exists to restore connectivity of the intertidal zone and any existing riparian or tributary community.

- ODFW requests that the EPA identify the following reaches and River Mile locations as existing shallow water and littoral zone habitats, and/or floodplain connectivity features of value that should be retained and improved through the remediation process:
    - RM 2-4: Mostly along the east and north east shore of the Willamette exists intermittent but often significant sections of shore line, particularly from the Georgia Pacific Industrial site upstream to the shipping slip at Schnitzer Steel near RM 3.8.
    - RM 4.3 – 5: On the south (west) bank of the Willamette River from Owens Corning upstream to the Atlantic Richfield/Arco property in Linnton is substantial shallow intertidal habitat.

- RM 5.8 to 6.9: On the north (east) bank, from Cathedral Park in St Johns upstream to where the Railroad Bridge crosses the river, a continuous section of intertidal shallow water type habitat exists in conjunction with a fairly intact riparian corridor. All proposed actions at this location need to be considered in the context of enhancing and restoring aquatic and terrestrial habitats. Of special note is the Willamette Cove area where contamination exists, but existing riparian and alcove areas provide habitat for foraging and shelter for migrating salmon and steelhead. The clean up remedy should be designed to maintain and improve riparian functions in this area with appropriate bank treatments to maintain a connection between the riverine environment and the uplands.
- RM 6.9 to 7.5: On the south (west) bank, from Doane Point at the RR crossing upstream to the shipping docks at Certain Teed, a continuous reach of shallow, littoral zone habitat exists. Protect this and enhance where possible.
- RM 7.5 to 8: On the north(east) shore, the entire area referred to as Waud Bluff has a substantial and functional riparian zone that runs adjacent to an undeveloped reach of the Willamette until it intercepts the Swan island Ship Basin. Maintain and improve habitat and fish and wildlife attributes where possible.
- RM 8: On the north (east) shore inside the Swan Island Boat Basin is a boat ramp at the head end. It remains popular for anglers wanting to access the Willamette for spring chinook and sturgeon angling. Repair, enhance and maintain.
- RM 9 – 10: Along the north (east) bank, from a concrete plant upstream to about the Ash Grove Cement plant (downstream of the I-405 Bridge) there is significant shallow water habitat that remains, broken only intermittently by some developments. Focus on enhancement and restoration.

- Significant shallow water type habitat, with fairly broad bands of functional intertidal littoral zones between high and low tide, exist in all sub-reaches of the Harbor. Remedial actions should strive to retain these intertidal transition zones and, if possible, enhance and restore function to these zones:
  - In addition, enhance connectivity to the shoreline where more gradual transitions to the riparian zone exists.
  - Some shallow water habitat continues to exist in some industrial barge and/or shipping slips like the upper end of the Swan Island Basin. If the long term vision of shipping, and maintenance of the facility allows for retention of existing shallow water - intertidally influenced beaches - then actions should be taken to retain, and/or improve these functions.
- Overall, with regard to remedy selection, ODFW recommends a balanced approach between Natural Recovery, Enhanced Monitored Natural Recovery, and Dredge and Cap, with an emphasis on leaving existing shallow area habitats intact if contaminated sediment is adequately contained and removing the contamination or otherwise immobilizing the contaminated sediment if it is accessible to the biota.

B. Riverbank Slopes

- RAO 9 identifies the need to reduce migration of COCs in river banks, but remedies assume caps will be placed on much of these banks and that minimum slopes will met a 1.7h:1V ratio. From an ecological perspective, having near vertical armored banks is detrimental to connectivity between the river and its upland areas and would discourage use of the river by terrestrial species, limit use by shore birds and amphibians and limit the usefulness of littoral and beach habitat. As stated in the FS, remedial elements involving riverbanks should have a slope of less than 5H:1V where feasible. We would encourage and recommend that remedial actions involving disturbance of the banks in shallow

area habitat require a final remediation of the banks to a slope of at least 5H:1V with littoral and beach areas at 7H:1V. Remediation of banks to more than a 5H:1V slope should only be allowed if industrial and commercial operations and structures preclude obtaining this desired slope. In those circumstances, ODFW recommends that banks have as close to the 5H:1V slope as is obtainable.

C. In-water Work Timing Guidelines

- We are encouraged that the FS recognizes the need to adhere to the in-water work timing guidelines established by ODFW. These guidelines are established to minimize impacts to fish species during critical portions of their life history. In the harbor area the in-water work timing guidelines are set to avoid a majority of the in and out migration and rearing of salmon and steelhead (many of which are listed species). It should be noted that some rearing occurs in the harbor year around, out migration is still occurring in the earlier part of the in-water work period and that upstream migration does occur in the latter part of the in-water work period. Therefore, in water work should still be designed to minimize impacts to fish even within the in-water work period.
- The FS identified one in-water work period (July 1st to October 31st). It should be noted that there are two in-water work periods in the Harbor area: July 1st to October 31st and December 1st to January 31st The second period is limited to activities below -20' National Geodetic Vertical Datum 1947. Flows are higher during the December to January in-water work period and migrating and rearing Chinook and Steelhead will preferentially use littoral and beach areas during this time period, so work in those areas should be avoided. This window may allow for some dredging and capping activities that would shorten the total amount of time needed to complete the final remedy.
- Although sturgeon do not spawn in the Portland Harbor reach (most spawning in the Willamette occurs upstream of Ross Island to Willamette Falls) they do forage in this reach and are present most of the year, particularly during the winter season (January through March). If dredging does take place in the later part of the second in-water period (January), areas with large aggregations of sturgeon should be avoided).

D. Capping/Dredging

- ODFW recommends that rock and rip rap type bank caps should be adequately top-dressed with appropriate soil type and depth to promote healthy, well established vegetative communities that 1) softens the transition between the river and land, 2) withstands erosion, and 3) provides for wildlife needs in the form of cover, forage, reproduction and rearing young. All new, above water rip rap type projects need to be top-dressed with soils to promote vegetative establishment across these otherwise harsh surfaces.
- ODFW recommends that capping options incorporate, to the extent possible, appropriate substrates and sediments that promote and support native benthic species use and provide foraging or resting/rearing habitat beneficial to a suite of native fish communities. Project design should select capping substrates natural to the area that will resist scour, and support native species of fish, invertebrates and possibly shell fish. In particular, ODFW recommends that EPA:
    - Ensure capping sediments are thick enough and of such consistency to provide for lamprey amocoete rearing.
    - Ensure capping substrates are appropriate for the hydraulic nature of the site, whether due to natural flooding or from seasonal boat use, commercial or recreational.
    - If appropriate, incorporate large rock or wood into the Cap design to diversify the aquatic environment and provide juvenile salmonids with foraging and resting areas.

- ODFW supports the FS dredge and cap method that maintains the original surface elevations , so long as the capping method includes an appropriate sediment or sand cap to maintain the original elevations and substrates. ODFW's main concern is that substrates do not become elevated above the water line, potentially shifting habitat towards more terrestrial land forms, further reducing littoral and beach areas and further compromising floodplain function within the reach.
- Where dredging is to occur if practical and deemed a benefit to native fish and wildlife we encourage dredged areas to be capped and regraded with clean substrate to support fish and benthic organisms. To reduce salmon and steelhead predator habitat we support the removal of dilapidated, obsolete or temporary structures and/or pilings before dredging or capping.
- The remedial actions identified for the Harbor should protect and enhance existing riparian corridors and communities to provide habitat for birds, small mammals and herpetiles. ODFW recommends that EPA work with property owners and PRPs to recognize the value of these vegetative buffers and promote continued maintenance and function.

E. River Recreational Access

- There are few river recreational access points in the Harbor area, and ODFW recommends that the remedy avoid, if at all possible, the elimination of those few access points. The main established recreational boat access points are in Cathedral Park and in the Swan Island Shipping Basin (Swan Island Ramp). If removal of these access points is unavoidable, the remedy should include construction of new boat ramps and access points in appropriate locations.

Oregon Health Authority

The Oregon Health Authority (OHA) has an interest in the selection of remedies for the Portland Harbor Superfund site, to ensure they will effectively address the main public health risk at the site: the consumption of resident fish. Since 2002, the Agency for Toxic Substances and Disease Registry (ATSDR) and OHA's Environmental Health Assessment Program (EHAP) have been assessing the public health risks of the contamination in both in-water and upland portions of the Portland Harbor Superfund site and educating the community on how to reduce or prevent exposures to these contaminants.

To effectively reduce public health risks, institutional controls such as fish advisories require adequate resources to ensure that the information is appropriately communicated to the affected individuals and communities. Outreach to the public must occur on multiple fronts, be sustained for as long as the fish remain unsafe to eat, and conducted in a way that builds trust within the communities that use and enjoy the Willamette River at the study site. OHA recommends the following activities as ways of ensuring effective communication to impacted communities:

- Providing financial resources to Multnomah County and community-based organizations that have expertise reaching immigrant, transient, low-income and minority communities.
- Increasing the number of advisory signs, posting them in prominent locations throughout the entire study site, and ensuring resources for their ongoing maintenance and/or replacement when damaged.
- Developing and carrying out fisher surveys in order to understand fishing populations and current practices which may change over time.
- Updating, revising and translating educational materials in multiple languages.
- Funding creative and culturally-appropriate approaches that reach the public on different fronts.

Additional health considerations to keep in mind include:

- As climate change continues and temperatures warm in the Willamette River, there will be fewer migratory fish and more warm water fish (including the resident species). Current public health messaging encourages people to eat migratory fish as an alternative to resident species since they have lower levels of contaminants. This is of particular concern for those with fewest resources or opportunities to either fish elsewhere, or buy fish from a grocery store.
- Dredging, or other remedies that stir up sediment, may release nutrients into the water column that could increase the frequency or severity of harmful algae blooms (HABs) in the short-term. In addition, HABs will occur more frequently as temperatures rise. At this time, we are unsure of the public health risks that may come from eating fish caught in waters affected by HABs.

We hope our comments will serve to inform allocation of resources over time, with regards to fish consumption from the Portland Harbor superfund site. More detailed information regarding fish advisories is provided below.

Using Fish Advisories as Institutional Controls (ICs)

Fish advisories used as ICs: "Informational Devices"
Public health has long known that information alone will not motivate people to change, especially if their current way of life is rooted in cultural, ethnic, economically practical and historic practices that sustain culture, family, and livelihoods. While fish advisories may carry important information, which is critical to understanding risk, they assume that people will modify or change their behaviors based on the information, thereby reducing or avoiding contaminants in fish. This type of strategy seeks to manage environmental risks by targeting the individuals and communities whose practices or ways of life expose them to a contaminated environment, asking them to change their ways [1].

Environmental Justice
Fish consumption advisories disproportionately affect communities of color, low-income communities, immigrant populations, tribes, and other indigenous peoples, given that these groups consume fish at higher rates and according to different practices than the general population [1]. There are inherent assumptions that are made when fish advisories are issued, the main one being that there are adequate substitutes for fishing at the same place, in the same manner, and for the same fish as one had traditionally fished for, or would today, were the fish not contaminated. This type of assumption mainly reflects a worldview that fishing and fish consumption are expendable "habits," "activities," or "behaviors," for which, at the very least, substitutes can be readily obtained; and that a groups' particular fishing and fish consumption practices can be altered without significant stress (or that this stress and loss does not matter) [3].

Portland Harbor
The current Portland Harbor (PH) fish advisory serves as the primary way to reduce human exposure to site-related contamination. Existing signs in the PH attempt to inform fishers of the advisory, in a variety of languages, but their effectiveness is limited. At this time, advisory signs are not even present in adequate numbers or locations, and fishers ignore the signs for many reasons including reasons we are unaware of, since to date there have been no substantial efforts to count or characterize the universe of those individuals and community groups that fish in the PH, or to systematically evaluate the seeming

ineffectiveness of the existing fish advisory. However, for 15 years we have known that at the Portland Harbor superfund site:

- The primary risk to public health is from eating contaminated resident fish;
- People catch and eat resident fish;
- Fishing is not deterred by existing advisories and multilingual posted signs.

Behavior Change: Beyond Information

Public health research on interventions designed to elicit behavior change tells us that this field of practice is highly dependent upon the frameworks within which the messages are carried out. A myriad of factors need to be considered, ranging from having a greater understanding of the contaminant levels in fish (often under-sampled), to the types of messages, and the ways in which those messages are communicated. Merely informing the public of contaminant levels, or the risk from contaminants, is not enough to ensure people have the information they need to make personal, informed decisions around fish consumption advisories or to comply with them. Affecting people's behaviors is complex and resource intensive. Messages need to be communicated in multiple ways, and with methods through which target audiences will encounter them frequently. Research also shows that:

- Messages that come from trusted and credible sources are most believable (sources will vary for different target audiences).
- Advisory messages need to be tailored for different audiences, and must consider reading level, culture, and preferred ways to receive information. [2]

Fish advisory communication must also be coordinated in partnership with local community-based organizations to communicate with typically hard-to-reach audiences, such as low income, urban and immigrant populations. Some specific examples of necessary communication and outreach include: mass media, social media, printed educational materials, signage (development and posting), tailored presentations to specific audiences, inclusion in the sportfishing regulations guides, coordinating and attending community engagement events, awareness-raising campaigns, and being involved in other creative approaches, for as long as the advisory is in place (decades).

In acknowledging that ICs will have to be used until residual contamination levels decrease, they should be as time-limited as possible. The remedy decision document should include information about using a fish advisory as an IC at Portland Harbor, ensuring there are adequate budgetary resources allotted to public health agencies for carrying out the advisory for as long as it is in place, and detailing the responsibility for monitoring the effectiveness of the remedy over time through fish tissue sampling and analysis.

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1. O'Neill, Catherine, Risk Avoidance, Cultural Discrimination, and Environmental Justice for Indigenous Peoples (2003). Ecology Law Quarterly, Vol. 30, 2003. Available at SSRN: http://ssrn.com/abstract=2263470 [confirmed Sept 2015].

2. Lauber, T.B., N.A. Connelly, J. Niederdeppe, and B.A. Knuth. 2013. What we know about fish consumption advisories: Insights from the experts and the literature. HDRU Publ. No. 13-6. Dept. of Nat. Resour., N.Y.S. Coll. Agric. and Life Sci., Cornell Univ., Ithaca, N.Y. 121 pp.

3. EPA National Environmental Justice advisory Council (NEJAC). 2001. Fish Consumption and Environmental Justice. A Report developed from the National Environmental Justice Advisory Council Meeting of December 3- 6, 2001. Published Nov 2002. Available at: http://www.epa.gov/environmentaljustice/resources/publications/nejac/fish-consump-report_1102.pdf [confirmed Sept 2015].

Oregon Marine Board

The Marine Board is the state's recreational boating agency and serves boaters through boating access facility improvements, marine law enforcement training and services, boating safety education and registration. The Marine Board is authorized to make boating restrictions under ORS 830.110 and 830.175. This would include restrictions on speed, motor size, motor types, and restrictions on activities such as waterskiing or anchoring, etc. Boating laws can be enforced by all peace officers, but the Marine Board currently contracts with Oregon State Police and 32 county sheriff's offices for enforcement. The Marine Board also has the authority to make rules for the uniform navigational marking of the waters of this state. In general, the Marine Board will not provide the signs and buoys required to mark special local boating restrictions. Purchasing and placing the markers is the responsibility of the agency requesting the restriction zone. The Board will prescribe how the zone is marked through a waterway marker permit as described in OAR 250-010-0201 through 250-010-0275. The waterway markers must also be approved by the US Army Corps of Engineers, the US Coast Guard, and the Dept. of State Lands.

General Harbor wide comments:

- Based on information from the Triennial Boater Use Survey, the lower Willamette River is one of the most-used waterbodies (river segments) in Oregon.
- The Marine Board would favor alternatives that don't restrict recreational boat use.
- The Marine Board is concerned about loss of boating access to the water; specifically, about actions that would eliminate access at the two developed boat ramps at Cathedral Park and Swan Island, and any action that would preclude the development of additional boat access sites in the future or maintenance of existing boat access sites.
- Slow-no-wake safety zones required for in-water work or near-water work must be adopted in rule or statute to be enforced. The Marine Board requires prior notice and planning as to how the zones will be marked and for enforcement. Any contractor doing in-water or shoreline work should be required to budget for dedicated work-zone enforcement from marine patrol.

Specific concerns regarding the Cathedral Park boat ramp:

- Removal of contaminated sediments near the Cathedral Park boat ramp would result in loss of access while dredging equipment is present, and may require temporary closure of the facility as well as removal of the docks during dredging. Such short-term effects would end after dredging is completed; however, the duration of closure is difficult to ascertain. Removal of material from around the ramp may lead to erosion or instability of the ramp's sub-base material. This could result in long-term maintenance issues with the ramp.
    - Recommendation: To minimize effects of temporary facility closure, remediation work should be scheduled such that an alternative launch/retrieval site is always available, i.e., both Cathedral Park and Swan Island ramps must not be closed at the same time. To avoid damage to the ramp, all sediments within 10 feet of the ramp structure should be excluded from dredging/removal plans.
- Integrated remediation alternatives would place fill in the boat ramp and dock areas at Cathedral Park – armor stone for capping sediment or carbon to stabilize contaminants. While the dredging depth would likely be adjusted to account for cap thickness, there is still the possibility that placement of such fill in the shallow nearshore area may reduce water depth and contribute to vessel grounding or allision. Likewise, grounding of docks may occur at low water if adequate water depth is not maintained.

- Recommendation: In case future sediment deposits warrant dredging, the dock and boat area should be identified as potential future maintenance dredge areas and the cap depth adjusted accordingly to allow a minimum of 6 feet navigational clearance plus 4 feet of potential sediment to be dredged.

Specific concerns regarding the Swan Island boat ramp:

- Placement of fill would permanently reduce present depths in the lagoon and boat ramp area and would impair future ability to conduct maintenance dredging or deepening at the site due to restrictions on disturbance of the cap layer. Reduced water depth at the boat ramp could make the facility less usable for boaters in the long-term, particularly during periods of low water. Restrictions on bed disturbance could significantly increase the difficulty of gaining authorization for future ramp maintenance.
- Placement of contaminated spoils in the lagoon would permanently reduce water depth in the lagoon. This shallow depth may preclude use by all but the smallest sailboats. As a result, deep draft vessels, including sailboats over about 20 feet in length, would be unable to use the Swan Island Ramp. Permanent use restrictions would likely be imposed on the disposal area. Anchoring or other activities that may disturb the bed would likely be prohibited in the lagoon. Though such use restrictions would not directly affect the use of the ramp, prohibitions on cap disturbance may also adversely affect or prevent future boat ramp maintenance activities.
- Heavy equipment operation may be incompatible with typical site uses. Site access may be blocked and temporary closure of the boat ramp may be necessary to protect the safety of site users. Contractors may wish to use the site for access to the water, including loading of equipment and launching work vessels. Short-term construction effects are expected to occur only during periods of active remediation or spoil disposal. Any damage caused to the ramp from heavy equipment use may have long-term adverse effects on ramp use and longevity.
  - Recommendation: To minimize effects of temporary facility closure, spoil disposal and remediation, work should not be scheduled at the same time as work that would close Cathedral Park boat ramp. To avoid damage to the ramp, any contractor that is considering using a boat ramp for launching or retrieving equipment must contact the Marine Board. All equipment exceeding the ramp's safe load bearing capacity or equipment not equipped with rubber tires would be prohibited from using the ramp. If use of the ramp is allowed, any damage would be the responsibility of the contractor.
- Conversion of the lagoon to uplands would entirely displace water from the boat ramp area and bury it with spoils. The shoreline would be moved one-half mile to the northwest of its current location, making the boat ramp unusable.
  - Recommendation: To mitigate for the permanent facility closure, a replacement boat ramp facility of similar size, use and level of development that complies with Marine Board design standards should be constructed to provide recreational boat access to the river.

Department of State Lands

State-owned submerged and submersible lands are under the jurisdiction of the State Land Board (SLB), a body composed of Oregon's Governor, Secretary of State, and Treasurer. Since 1967, the administrative arm of the SLB has been the Oregon Department of State Lands (DSL). The SLB and DSL's Land Management Division administer approximately 800,000 acres of state-owned submerged and submersible lands for the benefit of the public for navigation, commerce, fisheries, and recreation. Monies derived from proprietary management of state-owned submerged and submersible lands are deposited in a statutory account within Oregon's Common School Fund. Besides being a land manager, DSL is a regulator. In its

regulatory capacity, DSL is responsible for administering the state´s removal-fill law, which protects Oregon´s waterways and wetlands from uncontrolled alteration. DSL's interests in the Portland Harbor Superfund project are as land owners and keepers of public trust values on submerged and submersible lands and as a regulatory entity charged by state law with protecting wetlands and waterways.

Remedy Selection Factors

- The technology screening criteria do not allow placement of caps in areas that are too shallow. DSL agrees with that criterion. It is the responsibility of DSL and the State Land Board (SLB) to preserve and protect the rights of the public to use waterways to carry out navigation, commerce, fishing and recreation (public trust uses). It is the opinion of DSL that public trust uses are more severely impacted when submerged land is converted to submersible or new lands (see statutory definitions below). Impacts to public trust uses require compensation to the state through the proprietary authorization process.
- DSL would like to note some programmatic preferences if the EPA chooses to require sediment or soil caps as a remedy. A cap design (e.g. location, thickness, material, etc.) that minimizes the impact to public trust uses (e.g. allows anchoring, fishing, and motor usage, etc.) will require less compensation to the state than a cap that restricts public trust uses or impedes DSL's ability to lease the property in the future (restriction on driving pile, placing docks, etc.). Also, a minimum size area for a sediment cap should be considered by EPA. DSL will require easements with a number of special conditions for sediment caps on state-owned lands. A large number of small caps will increase the tracking, monitoring and enforcement workload for DSL and other agencies. A number of small caps in close proximity in an area can have greater impacts than they would otherwise have. Consideration should be given to the cumulative effects of multiple sediment caps that could be constructed in certain segments of the Harbor.

State Proprietary Authorization of Remedial Action

- Impacts to public trust uses require compensation to the state through the proprietary authorization process. The cost of this consideration should be included in the evaluation. Many DSL-focused concerns regarding implementing the Portland Harbor remedy on state-owned submerged and submersible lands were addressed in the rulemaking that resulted in OAR 141-145. The State Land Board adopted these rules in June of 2013. DSL convened a rules advisory committee (RAC), whose charge was to "Seek collaborative solutions for how ODSL can best meet its public trust responsibilities and receive fair compensation through a set of administrative rules to facilitate the sale or granting of authorizations for the use of state land for remediation and restoration activities."
- It is the responsibility of DSL and the SLB to preserve and protect the rights of the public to use waterways to carry out navigation, commerce, fishing and recreation. While DSL may balance competing interests to use waterways, the public trust doctrine in Oregon prohibits the substantial impairment of public uses (Morse v. Oregon Division of State Lands, 285 Or 197, 200-204 (1979)).
- DSL with the assistance of the RAC developed a compensation schedule that considers "minimal", "moderate" and "significant" impacts to both public trust uses and DSL's ability to issue future leases at the location. Rather than indicating any remedy preference DSL and the stakeholders participating in the rulemaking determined that remedial actions that limit future public trust uses should correspondingly compensate the common school fund for those impacts. Greater restrictions result in a greater compensation due for authorization.

- Sediment caps will generally be authorized through 30 year easements. Concerns regarding future liability for capped areas will be addressed via insurance, financial assurance, and indemnification.

Plans for Institutional Controls

- DSL rules for authorizing remedial action on state-owned submerged and submersible land base compensation on the extent to which the lands are restricted. DSL recommends that EPA require predictable performance standards for caps such that public trust uses are not impacted.
- Will institutional controls for capped areas be consistent or depend on specific design to be determined later? What is the range of limitations that may be required e.g. anchoring, building, driving pile, fishing, recreation, or other activities?
- We understand (from EPA staff at CAG on 5/13/15) that Monitored Natural Recovery and Enhanced Monitored Natural Recovery areas will not require any long term restrictions. To the extent that restrictions are determined to be necessary for these areas, authorization may be needed.

Referenced Statutory Definitions

- ORS 274.005 (7) "Submerged lands," except as provided in ORS 274.705, means lands lying below the line of ordinary low water of all navigable waters within the boundaries of this state as heretofore or hereafter established, whether such waters are tidal or nontidal.
- ORS 274.005(8) "Submersible lands," except as provided in ORS 274.705 means lands lying between the line of ordinary high water and the line of ordinary low water of all navigable waters and all islands, shore lands or other such lands held by or granted to this state by virtue of her sovereignty, wherever applicable, within the boundaries of this state as heretofore or hereafter established, whether such waters or lands are tidal or nontidal.
- ORS 274.905 (1) "New lands" means those lands protruding above the line of ordinary high water, whether or not connected with the adjoining or opposite upland or riparian lands on the same side of the body of water, which have been created upon submersible or submerged lands by artificial fill or deposit. "New lands" does not include bridges, wharves and similar structures constructed upon submersible or submerged lands by other than artificial fill or deposit.

Oregon Department of Transportation

The Oregon Department of Transportation's (ODOT) mission is to provide a safe, efficient transportation system that supports economic opportunity and livable communities for Oregonians. Safety is a key value for the agency and ODOT has an interest in remedy alternatives that affect the general public's ability to travel safely in the area surrounding the river cleanup. ODOT offers the following items to consider in remedy selection.

- A remedy that relies on dredging without onsite disposal will affect the surrounding transportation infrastructure. If the dredged material is disposed of off-site by trucks, this would result in increased congestion that has economic, community livability and environmental impacts. On an infrastructure level, pavement performance and service life can be diminished with heavier traffic than what was anticipated during design. Infrastructure will require greater maintenance and repair more frequently with higher concentrations of truck traffic. Also consider including requirements by transporters to have spill cleanup/response plans in place in the case of a spill on the highway and notification requirements to emergency responders if dredged sediment is transported by train.

- A cap in the vicinity of a bridge may impact ODOT's ability to perform maintenance or construction work around bridge support structures in the river. For seismic upgrades, the bridge piers for the St. Johns Bridge and the Fremont Bridge would increase in size by 50% and the work would require a setback of approximately 20 feet around the piers for in-water work. If a cap is placed in the vicinity of the bridge piers before any seismic upgrades occur, the cap will likely be damaged in the process because the construction would require anchoring and disturbance of the river floor.